

P A T E N T

– 13, 15 – 22 and 31 – 39 have been objected to as being dependent upon a rejected base claim, but would be considered allowable by the examiner if rewritten in independent form, including all limitations of the base claim and any intervening claims. Applicants respectfully traverse the rejections, based on the following remarks.

Applicants respectfully traverse the rejection of claims 1 and 23 under 35 U.S.C. §102(e) as being anticipated by Higgins et al.

With respect to the subject matter of each of the claims, Applicants respectfully note that the Higgins et al. patent was issued on July 24, 2001. Applicants respectfully note that the underlying patent application for the Higgins, et al. patent was filed on December 22, 1998. Applicants' U.S. patent application claims priority of a Canadian patent application filed on February 15, 1999. Applicants are currently in the process of reviewing whether the Applicants may be able to "swear back" of the Higgins, et al. patent. Applicants will obtain such information as soon as reasonably possible.

Independent of whether the Applicants may be able to "swear back" of the Higgins, et al. patent, Applicants respectfully submit that claims 1 and 23 are not anticipated by Higgins, et al. The Higgins, et al. patent is directed to noise suppression and channel equalization pre-processing for speech and speaker recognition systems.

With reference to FIG. 2A, sample data indicative of a noisy voice input signal and comprising the speech utterance is applied through an A/D converter for input to a pre-processor. The voice signal includes PCM sampled signals, and a FFT 60 transforms

P A T E N T

the data into a "frequency domain" representation. Further processing is provided by the noise suppression channel equalization modules 63. After the frequency domain processing, an IFFT 140 transforms the data back to the time domain. Although column 7, lines 1 – 30 of Higgins, et al. discusses the concept of a histogram for each frequency bin, Applicants question whether these histograms can be characterised as being "based on the discrete frequency and amplitude values" of the continuous signal representation as set forth in claim 1. Higgins, et al. describes the concept of constructing histograms of the magnitude spectra which are generated for each frequency, using each of the frames which comprise a particular utterance and are stored in memory. To the extent that the histograms disclosed in Higgins, et al. are not based on discrete frequency and amplitude values of continuous signal representations, Applicants respectfully submit that claim 1 is not anticipated by Higgins, et al.

With respect to claim 23, the claim defines a histogram module for generating a histogram based on discrete frequency and amplitude values. As with claim 1, Applicants question the teachings of Higgins, et al. with respect to specifically teaching a histogram based on discrete frequency and amplitude values of continuous signal representations. For the foregoing reasons, Applicants respectfully submit that neither claim 1 nor claim 23 is anticipated by Higgins, et al.

P A T E N T

Applicants respectfully traverses the rejection of claims 2, 4 – 8, 14, 24 and 26 – 30 under 35 U.S.C. §103(a) as being unpatentable under Higgins et al. in view of Kleider et al. and Fry.

Assuming, arguendo, that Higgins et al. is appropriate prior art, Applicants respectfully reject the combination of Higgins et al. with Kleider et al. and Fry. The Higgins et al. patent is directed to noise suppression and channel equalisation pre-processing for speech and speaker recognition systems. The Kleider et al. patent is directed solely to an apparatus for performing non-linear signal classification in a communications system. Applicants respectfully submit that there is no teaching or suggestion whatsoever in Higgins et al. to utilize any type of log – domain system or representation within the Higgins et al. system. Further, Kleider et al. does not teach or suggest in any manner whatsoever the application of a log – domain representation with a system such as the Higgins et al. patent. Further, the Fry patent teaches the use of a direct sequence spread spectrum direction finder. There is no teaching or suggestion whatsoever in Higgins et al. to utilize any type of plurality of analog-to-digital converters, as may be taught by Fry. Further, there is no teaching or suggestion whatsoever in Fry to utilize any plurality of analog-to-digital converters in a system such as Higgins et al.

For all of the foregoing reasons, Applicants respectfully submit that Higgins et al. cannot be tenably combined with Kleider et al. and Fry. Accordingly, Applicants

P A T E N T

respectfully submit that the claims referenced by the examiner as being rejected under the alleged combination are patentable over the alleged combination.

Assuming, arguendo, that Higgins et al. can be tentatively combined with Kleider et al. and Fry, Applicants respectfully submit that the alleged combination still does not teach Applicants' invention as defined in claims 2, 4 – 8, 14, 24 and 26 – 30.

Each of claims 2, 4 – 8 and 14 is directly or indirectly dependent from claim 1, and includes all limitations set forth therein. For the reasons previously set forth herein, Higgins et al. does not teach or otherwise anticipate Applicants' invention as defined in claim 1. Adding the teachings of Kleider et al. and Fry to the teachings of Higgins et al. still does not teach or suggest those aspects of claim 1 which make claim 1 patentable over Higgins et al. For these reasons, Applicants respectfully submit that claim 1 is neither taught nor suggested by the alleged combination. Because each of claims 2, 4 – 8 and 14 is directly or indirectly dependent from claim 1, and incorporates all limitations thereof, Applicants respectfully submit that none of these dependent claims are taught or suggested by alleged combination.

Each of claims 24 and 26 – 30 is directly or indirectly dependent from claim 23, and incorporates all limitations thereof. For the reasons previously set forth herein, claim 23 is neither taught nor anticipated by Higgins et al. Adding the teachings of Kleider et al. and Fry to the teachings of Higgins et al. still does not teach or suggest those aspects of claim 23, which make claim 23 patentable over Higgins et al. For these

P A T E N T

reasons, Applicants respectfully submit that claim 23 is neither taught nor suggested by the alleged combination. Because each of claims 24 and 26 – 30 is directly or indirectly dependent from claim 23, and incorporates all limitations thereof, Applicants respectfully submit that none of these dependent claims are taught or suggested by the alleged combination.

As earlier stated, the examiner has set forth that claims 9 – 13, 15 – 22 and 31 – 39 would be allowable if rewritten in independent form, including all of the limitations of the base claim and any intervening claims. Each of these claims is directly or indirectly dependent from claim 1 or claim 23. For the reasons previously set forth herein, Applicants respectfully submit that claims 1 and 23, and any and all intervening claims are patentable over the prior art set forth by the examiner. Accordingly, Applicants respectfully submit that each of these dependent claims is also patentable over the prior art.

In view of all the foregoing, Applicants respectfully submit that claims 1 – 39 are now in condition for allowance, and earlier notification of allowability is respectfully requested. Should any questions arise in connection with the above, please contact Thomas L. Lockhart at the telephone number of (616) 336-6000.

Respectfully submitted

FRANCOIS, PATENAUD and MARTIAL DUFOUR

P A T E N T

Dated: 3/12/03

By: Mark Lockhart  
Thomas L. Lockhart, Reg. No. 29,324

VARNUM, RIDDERING, SCHMIDT & HOWLETT LLP  
Bridgewater Place  
Post Office Box 352  
Grand Rapids MI 49501-0352  
Telephone No.: (616) 336-6000  
Facsimile No.: (616) 336-7000